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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/893,989	06/29/2001	Jong Won Lee	41501-5428	5666

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EXAMINER

GUHARAY, KARABI

ART UNIT	PAPER NUMBER
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2879

DATE MAILED: 08/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

09/893,989

Applicant(s)

LEE, JONG WON

Examiner

Karabi Guharay

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) 14-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 25-26 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____. | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

Claims 1 and 25 have been amended.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 25-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Oda et al. (US 6396208).

Regarding claim 25, Oda et al. disclose an electroluminescent device in Fig 1, comprising a substrate (1) having a smooth surface, a lower electrode layer (2) having a first surface in contact with the smooth surface of the substrate, and a second surface with an uneven surface profile (having convex shapes 3), an insulating layer (4) over the electrode layer, having an uneven surface profile substantially corresponding to the uneven surface profile of the lower electrode, a light emitting layer (5) over the insulating layer (4), having an uneven surface profile substantially corresponding to the uneven surface profile of the insulating film, an upper electrode layer (6) over the light emitting layer (5), having an uneven surface profile substantially corresponding to the uneven surface profile of the light emitting layer (lines 27-37 of column 2).

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Regarding claim 26, Oda et al. teach that the uneven profile of the lower electrode has a plurality of convex shapes 3 each of which is substantially hemispheric (see Fig 2, lines 56-62 of column 2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, & 8-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levinson (US 4774435) in view of Applicant's admitted prior art further in view of Oda et al.

Regarding claim 1, Levinson discloses an electroluminescent device in Fig 2, comprising a substrate (30) a lower electrode layer (31) over the substrate having a plurality of convex shapes in its surface, an insulating layer (32) over the electrode layer, a light emitting layer (33) over the insulating layer (32), an upper electrode layer (35) over the light emitting layer (33) wherein the insulating layer, light emitting layer and the upper electrode layer are formed in succession.

However, Levinson does not teach a passivation layer over the upper electrode layer, however, applicant's admitted prior art teaches a passivation layer over the upper electrode. It is well known that the passivation layer upon the upper electrode in an EL device protects EL element from environment. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include a passivation layer over the upper electrode in the device of Levinson, in order to protect the EL device from environment

Further Levinson does not teach a substrate having a smooth surface, which in contact with first surface of the lower electrode, in other words Levinson uses uneven surface of substrate on which lower electrode is disposed. Levinson uses this uneven profile of electrode, insulating layer, luminescent layer in order to improve luminescent characteristics of the device. In the analogous art of electroluminescent display, Oda et al. also uses uneven profile of lower electrode, insulating layer, luminescent layer and the other electrode (Fig 1) disposed in order in a substrate 1 where substrate has a smooth profile which is contact with smooth lower surface of electrode 2 and the other surface of the electrode 2 has convex shapes 3, in order to improve luminescence or brightness of the display. Thus it would have been obvious design choice for an ordinary skill of art to modify Levinson's display device with smooth surface substrate instead of uneven substrate, since both are equivalent for the purpose improving luminescence of the device.

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Regarding claim 8, Levinson teaches that the insulating layer, light emitting layer, upper electrode layer have substantially the same surface profile as the lower electrode layer.

Regarding claim 9, Levinson discloses that the lower electrode layer has a single layer structure of a metal layer (lines 30-32 of column 3).

Regarding claim 11, Levinson discloses that the insulating layer (32) includes barium titanate (lines 34-35 of column 2).

Regarding claim 13, Levinson teaches that the light-emitting layer includes ZnS doped with at least one of Cu and Mn (lines 38-39 of column 2).

Regarding claim 10, and 12, Levinson uses indium tin oxide layer (transparent layer) as the lower electrode while uses aluminum as the upper electrode since emitted light from the device is coming out from the transparent lower electrode through the transparent substrate. It is well known in the art that the light could be emitted from front (upper end) or back (lower end) of the panel, depending whether upper or lower electrode is transparent. It is noted that applicant's specific upper electrode being ITO and the lower electrode being made of aluminum does not solve any of the stated problems or yield any unexpected result that is not within the scope of the teachings applied. Therefore it is considered to be a matter of choice, which a person of ordinary skill in the art would have found obvious to select one of upper or lower electrode be a transparent electrode consequently the other be an aluminum electrode depending upon the choice of direction of light emission.

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Claims 2-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Levinson and AAPA and Oda et al. as applied to claim 1 above, and further in view of Kuribayashi et al. (US 6215244).

Regarding claims 2-7, Levine and AAPA meets all the limitations of claims 2-7 except that the lower electrode has an extra layer of polysilicon together with the metal layer wherein metal layer could be Al (see rejection of claim 10 & 12).

However, Kuribayashi et al. discloses an EI device having uneven electrodes (Fig 18) where in there is a polysilicon layer together with the first electroconductive layer in order to enhance adhesion of the electroconductive layer (lines 50-56 of column 2).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to include a polysilicon layer in the lower metal electrode layer of Levine so that adhesion of the electrode to the substrate can increase.

Further using a suitable metal such as tungsten for the electrode layer is considered to be within the skill of a general worker in the art.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karabi Guharay whose telephone number is (703) 305-1971. The examiner can normally be reached on Monday-Friday 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (703) 305-4794. The fax phone number for the organization is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

K.G.

Karabi Guharay
Patent Examiner
Art Unit 2879



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